Small Business Innovation Research/Small Business Tech Transfer

GaN-based, low-voltage avalanche photodiodes for robust and compact UV imagers, Phase I

Completed Technology Project (2009 - 2009)

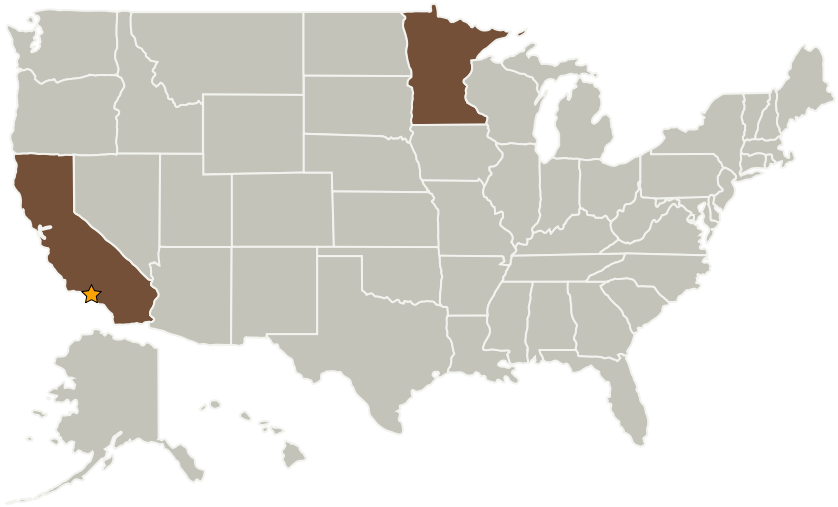
Project Introduction

This Phase I SBIR program is directed toward the development of a novel low-voltage (~10V) AlGaN-based multi-quantum well (MQW) avalanche photodiode (APD) on low-cost substrates. The high-gain, high-speed and low-noise operation of the proposed device allow the replacement of bulkier and more fragile photomultiplier tubes (PMTs) for many UV photon-counting and imaging applications. In particular, reduction in size and weight in addition to improvements in reliability and ruggedness compared to PMTs, make this technology very suitable for some of the NASA's planned space missions as well as other civilian and defense applications that require high-sensitivity, solar-blind UV detection.

Anticipated Benefits

Potential NASA Commercial Applications: Fabrication of low-cost UV detectors and imaging arrays is very important for many applications including optical communications, medical imaging, polymer curing, air and water purification, and chemical/biological hazard detection.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
SVT Associates	Supporting Organization	Industry	Eden Prairie, Minnesota

Primary U.S. Work Locations	
California	Minnesota

Project Transitions

January 2009: Project Start

July 2009: Closed out

Closeout Summary: GaN-based, low-voltage avalanche photodiodes for robust and compact UV imagers, Phase I Project Image

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Celestino Jun Rosca

Principal Investigator:

Amir Dabiran

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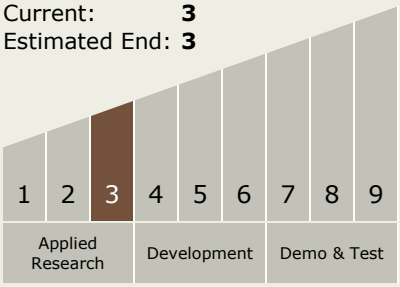
Technology Maturity (TRL)

Start: **3**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes